

REMARKS

Introduction

Claims 1-13 were originally pending in the PCT application to which this application claims priority. On September 8, 2000, in a paper submitted to the International Preliminary Examining Authority at the European Patent Office, new claims 1-12 were presented. New dependent claims 13 and 14 have been added to further define the invention. Accordingly, claims 1-14 are presently pending in this application.

Claim Rejections

35 U.S.C. §112, First Paragraph

Claims 1-12 were rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Claims 1, 2 and 4 have been amended to correct clerical errors which were made in the paper submitted September 8, 2000 to the International Preliminary Examining Authority.

In support of the rejection of claims 1-12 under 35 U.S.C. §112, the Examiner suggests the specification fails to satisfy the written description requirement because it does not describe the subject matter in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Specifically, the Examiner states that the applicant discloses numerous equations with no supporting material as to how these applications were compiled.

Applicant respectfully traverses this rejection, and respectfully submits that explanation of how the equations of claims 1-4 were compiled is not necessary for satisfying the written description requirement. Instead, an applicant satisfies the written description requirement “by describing the claimed invention with all of its limitations using such descriptive means as words, structures, figures, diagrams, and formulas that fully set forth the claimed invention.” Lockwood v. American Airlines, Inc., 107 F.3d 1565, 1572 (Fed. Cir. 1997). The equations disclosed in independent claims 1 through 4 are each supported in the specification, exactly as claimed. Specifically, lines 38-39 and 117 as well as the abstract discloses the equation of claim 1, line 48 discloses the equation of claim 2, lines 58-59 and 124-26 discloses the equation of claim 3, and lines 68-69 discloses the equation of claim 4. The variables used in the equation are explained in detail therein as well. Moreover, lines 112-127 of the specification describe a specific embodiment of a claimed windscreen wiper, including a sample calculation using the equations in lines 112-127. Therefore, because the specification includes verbatim recitation of the equations of claims 1-4, explanation of the variables used in the equations, and sample calculations using a specific embodiment of a claimed windscreen wiper, applicant respectfully submits that the written description requirement has been met. As such, applicant requests reconsideration of the rejection based on 35 U.S.C. §112, first paragraph.

35 U.S.C. §112, Second Paragraph

Claims 1-12 were also independently rejected under 35 U.S.C. §112, second paragraph, as being indefinite. In support of this rejection, the Examiner suggests that the equations of claims 1-4 are missing essential parentheses, and as such, the equations are unclear because they can be solved in a variety of ways.

The applicant must respectfully disagree with the Examiner's assertion. Conventional mathematical "order of operations" rules dictate that operations in brackets or parentheses are performed first. Thereafter, division and multiplication operations are performed, and then addition and subtraction operations are performed. Using these basic rules, the equations disclosed in claims 1-4 have only one solution. Applicant respectfully submits that persons having ordinary skill in the art are familiar with these "order of operations" rules. Thus, applicant respectfully submits that claims 1-4 are not indefinite and requests reconsideration of the rejections based on 35 U.S.C. §112, second paragraph.

35 U.S.C. § 102(b)

Claims 1-6, 8-9, and 11-12 were rejected under 35 U.S.C. §102(b) as being anticipated by the Merkel et al. '843 patent. Furthermore, claims 1-6, 8-9, and 11-12 were rejected under 35 U.S.C. §102(b) as being anticipated by the Arman '328 patent. Claims 1-12 were also rejected under 35 U.S.C. §102(b) as being anticipated by the Swanepoel et al. '643 patent. A claim is said to be anticipated where each and every limitation of the claim can be found in a single prior art reference. As discussed in greater detail below, the elements of each independent claim 1-4 cannot be found in any single reference. Accordingly, applicant respectfully traverses this rejection.

The Merkel et al. and Arman Patents

As noted above, claims 1-6, 8-9, and 11-12 were rejected under §102(b) as being anticipated by the Merkel et al. and Arman patents. In support of the rejections, the Examiner measured the

length, width, and thickness of the windscreen wipers shown in the figures in each patent. Based on these measurements, the Examiner asserts that the wipers disclosed in each of the Merkel et al. and Arman patents meet the criteria defined in each of claims 1 through 4. Applicant must respectfully disagree with the Examiner's assertion.

First, it is apparent that the Examiner miscalculated in solving the equations of claims 1-4. Using the dimensions taken from the drawings as well as the "order of operations" rules set out above, the equations were applied to the wipers of the Merkel et al. and Arman patents, results of which are shown in Tables 1 and 2 below.

Table 1 – Merkel et al. Wipers

		Claimed Maximum	Measured Value	% Deviance from Maximum Value
W_m		2.39	6.3	160%
R_w		0.011	0.029	164%
T_m		0.96	1.59	65%
R_t		0.004	0.0074	85%

Table 2 – Arman Wipers

		Claimed Maximum	Measured Value	% Deviance from Maximum Value
W_m		3.287	8.25	151%
R_w		0.014	0.034	142%
T_m		0.98	1.59	62%
R_t		0.0041	0.0066	61%

Thus, in regard to claim 1, none of the wipers disclosed in the Merkel et al. and Arman patents has a W_m dimension that is at most equal to $(-8.889 \times 10^{-5} * E + 0.05378) * L - 5.25$. Also, in regard to claim 2, none of the wipers disclosed in the Merkel et al. and Arman patents has a R_w dimension that is at most equal to $(-8.889 \times 10^{-5} * E + 0.05378) - 5.25/L$. Furthermore, in regard to claim 3, none of the wipers disclosed in the Merkel et al. and Arman patents has a T_m dimension that is at most equal to $0.0007 * L - 0.0027407 * E + 1.37814$. Finally, in regard to claim 4, none of the wipers disclosed in the Merkel et al. and Arman patents has a R_t dimension that is at most equal to $0.0007 - (0.0027407 * E - 1.37814)/L$. Therefore, because neither the Merkel et al. patent nor the Arman patent individually teaches or discloses wipers meeting the criteria of any of independent claims 1-4, the applicant respectfully requests reconsideration of the §102(b) rejection based on these prior art patents.

Nevertheless, even if the physical dimensions taken from the drawings of the Merkel et al. and Arman patents met the criteria of claims 1-4, a rejection based on measurements taken from a patent drawing would still be improper. This is because patent drawings are generally not made to scale and include no dimensions. When the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurements of the drawings are of little value. MPEP §2125.

“[I]t is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.” Hockerson-Halberstadt, Inc. v. Avia Group Int'l, 222 F.3d 951, 956 (Fed. Cir. 2000).

None of the drawings of any of the references include dimensions. In support of the rejection, the Examiner does not cite where the references state that the drawings are to scale. Applicant has reviewed each of these references and found that there is no mention in the Merkel et al. and Arman patents that the drawings are to scale. This makes sense since the wiper systems disclosed in each of the references would not be functional or practical if they were actually manufactured at the scale shown in the figures. In view of these facts and the controlling authority, applicant respectfully submits that the dimensional measurements of the wipers shown in the drawings of the Merkel et al. and Arman patents may not be relied upon in support of the contention that the patents disclose a windscreen wiper having dimensions that meet the dimensional limitations of any of claims 1-4. MPEP §2125. Thus, applicant respectfully submits that the Merkel et al. and Arman patents do not anticipate or render obvious the invention described in claims 1-4 of the patent application.

Additionally, neither of the backbones disclosed in the Merkel et al. and Arman patents is spatially consolidated, as is required by claims 1-4. The term spatially consolidated is defined in the body of the specification to mean that the actual perimeter of a cross-section of the backbone coincides with the shortest possible perimeter encapsulating that cross-section. (See page 1, line 27.)

By way of explanation, it is mentioned that in accordance with this definition, shapes such as, for instance, a polygonal, circular, or elliptical cross-section will be spatially consolidated, as there is no conceivable imaginary boundary or perimeter for such a cross-section which completely encapsulates the cross-section and which is shorter in total length than the actual perimeter of the cross-section. In contrast, profiles such as an I-shaped profile will not be spatially consolidated, as it is possible to postulate a rectangular boundary which encapsulates the entire profile and which is shorter in total

length than the actual I-shaped perimeter of the I-shaped profile. The same applies to U-shaped, X-shaped, V-shaped, and like profiles.

The backbone disclosed in the Merkel et al. patent is not spatially consolidated because the cross section of the backbone of this wiper consists of two laterally spaced rectangles. A rectangular boundary extending around the two rectangles is the shortest possible perimeter encapsulating this profile. However, this does not coincide with the actual perimeter of the backbone. Thus, the Merkel et al. backbone is not spatially consolidated as required by claims 1-4, thereby demonstrating that the Merkel et al. patent neither anticipates nor renders obvious any of the wipers disclosed in claims 1-4 of the patent application.

Likewise, the backbone disclosed in the Arman patent is not spatially consolidated because it is longitudinally split down the middle. As such, most of the actual cross section of this backbone is two laterally spaced rectangles. A rectangular boundary extending around the two rectangles is the shortest possible perimeter encapsulating this profile. However, this does not coincide with the actual perimeter of the backbone. Thus, the Arman backbone is not spatially consolidated as required by claims 1-4, thereby demonstrating that the Arman patent neither anticipates nor renders obvious any of the wipers disclosed in claims 1-4 of the patent application.

The Swanepoel Patent

As noted above, claims 1-12 were rejected under §102(b) as being anticipated by the Swanepoel et al. patent. In support of the rejections, the Examiner used the length, width, and thickness of the windscreen wipers disclosed in the patent. Based on these dimensions, the

Examiner asserts that the wipers disclosed in the Swanepoel et al. patent meets the criteria defined in each of claims 1 through 4. Applicant must respectfully disagree with the Examiner's assertion.

It is apparent that the Examiner again miscalculated in solving the equations of claims 1-4. Using the dimensions as well as the "order of operations" rules set out above, the equations were applied to the wipers of the Swanepoel et al. patent, results of which are shown in Tables 3 below.

Table 3 – Swanepoel et al. Wipers

		Claimed Maximum	Measured Value	% Deviance from Maximum Value
W_m		10.317	11	7%
R_w		0.0234	0.025	7%
T_m		1.1188	1.15	3%
R_t		0.002543	0.0026	4%

Thus, in regard to claim 1, the wiper disclosed in the Swanepoel et al. patent does not have a W_m dimension that is at most equal to $(-8.889 \times 10^{-5} * E + 0.05378) * L - 5.25$. Also, in regard to claim 2, the wiper disclosed in the Swanepoel et al. patent does not have a R_w dimensional ratio that is at most equal to $(-8.889 \times 10^{-5} * E + 0.05378) - 5.25/L$. Furthermore, in regard to claim 3, the wiper disclosed in the Swanepoel et al. patent does not have a T_m dimension that is at most equal to $0.0007 * L - 0.0027407 * E + 1.37814$. Finally, in regard to claim 4, the wiper disclosed in the Swanepoel et al. patent does not have a R_t dimensional ratio that is at most equal to $0.0007 - (0.0027407 * E - 1.37814)/L$. Therefore, because the Swanepoel et al. patent does not teach or disclose wipers

meeting the criteria of any of independent claims 1-4, the applicant respectfully requests reconsideration of the §102(b) rejection based on this prior art patent.

The patentability of the present invention is further supported by the extensive experimentation that was conducted by the inventor before discovering that wiper beams falling within the claimed parameters have superior dynamic performance to other wiper beams. The dynamic performance of a single beam windscreen wiper such as that described by the claims is extremely complex and currently defies accurate mathematical analysis. There are, furthermore, a number of divergent factors which need to be taken into consideration in designing a beam or backbone for a windscreen wiper. These factors not only include the structural mechanics of the beam, but also the force distribution on surfaces with continuously varying curvatures, tip judder resistance, wind lift characteristics, economical production, integration with wiper arms, etc. Taking into account these factors, the formulae of claims 1-4 have been established empirically during five years of arduous, ground-breaking research and development. Such extensive research work is well beyond the scope of routine experimentation associated with development.

Successful commercial exploitation of the concept of a single beam wiper blade has been frustrated by, amongst other things, the unpredictability of dynamic performance of such wipers and the elusiveness of a design which satisfies all the factors required for an effective and economically viable single beam wiper. The applicant has found that single beam wiper blades according to the invention overcome many difficulties experienced by prior art single beam wiper blades.

The extent to which those having ordinary skill in the art have pursued the concept of a successful single beam wiper blade in the past can be seen by the large number of patents addressing this type of device. There are thirty-three patents listed in the Information Disclosure Statement for

this application alone. In this regard, note that U.S. Patent No. 3,192,551 to Appel was filed almost forty years ago, but the basic concept has not yet been successfully commercialized by others. Despite the extensive attention the field of the invention has received in the past, none of the cited prior art documents, or any other prior art document of which the applicant is aware, discloses a wiper blade backbone meeting the criteria of any of claims 1 to 4. Once again the applicant emphasizes that these prior art documents span a period of almost forty years. A commercially successful single beam wiper blade has enormous commercial potential. Yet none of the devices disclosed in the related art have been successfully commercialized to date.

It is submitted that, if the design of a wiper backbone in accordance with the expressions of claims 1 to 4 fell within the scope of routine experimentation, then the highly skilled and qualified inventors identified in the cited prior art would have previously produced a wiper backbone falling within the scope of the claims of the present invention. Interestingly, the wiper backbones disclosed in the applicant's own earlier U.S. Patent Nos. 5,325,564 and U.S. Patent No. 5,485,650 do not satisfy the criteria of claims 1 to 4. If the limits set in the claims of the present application were indeed disclosed or otherwise suggested in the prior art, then the applicant would have designed his initial wiper backbones, as disclosed in his earlier patents, to satisfy the relevant criteria.

Dependent Claims 5-12 Not Anticipated by Prior Art

Claims 5-12 are all ultimately dependent upon either independent claim 1 or 3 and add further limitations thereto. Accordingly, applicant respectfully submits that none of the cited prior art patents anticipates or renders obvious the invention described in claims 5-12 of the patent application.

35 U.S.C. § 103

Claims 7 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the the Merkel et al. and Arman patents, both in view of the Appel '551 patent. Claim 7 is dependent upon and adds further limitations to claim 1, and claim 10 is dependent upon and adds further limitations to claim 3. In this case, applicant respectfully submits that dependent claims 7 and 10 describe an invention that includes limitations that are neither disclosed nor suggested by the cited references standing alone or by a combination of the cited references. Accordingly, applicant respectfully traverses this rejection based on 35 U.S.C. § 103(a) and requests that it be withdrawn for the reasons set forth above with respect to claims 1 and 3.

New Claims 13 and 14

Claims 13 and 14 were added to further define the invention. Claims 13 and 14 are ultimately dependent upon claim 1 and claim 3, respectively. No new matter has been added. Therefore, applicant respectfully solicits the allowance of claims 13 and 14.

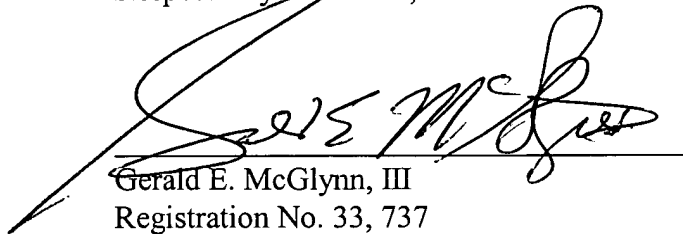
Conclusion

Claims 1, 2 and 4 have been amended only to correct clerical errors made in the paper submitted September 8, 2000 to the International Preliminary Examining Authority. Furthermore, independent claims 1-4 recite structure that is not disclosed or suggested by the prior art and are patentably distinguishable from the subject matter of the references discussed above. Claims 5-12 are all ultimately dependent upon either independent claim 1 or 3 and add further perfecting

limitations. Applicant respectfully submits that the prior art references, alone or in combination, do not disclose or suggest the present invention. However, and even if they did, they could only be applied through hindsight after restructuring the disclosures of the prior art in view of the applicant's invention. Accordingly, applicant respectfully solicits the allowance of claims 1-12. In addition, applicant respectfully solicits the allowance of new claims 13 and 14 for the same reasons.

Finally, if the examiner has any questions or would like to discuss any of the matters set forth above, the Examiner is encouraged to contact undersigned counsel at the telephone number indicated below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Gerald E. McGlynn, III", is written over a horizontal line.

Gerald E. McGlynn, III
Registration No. 33, 737
BLISS McGLYNN, P.C.
2075 W. Big Beaver, Suite 600
Troy, MI 48084
(248) 649-6090

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